

Additions and amendments to “Aphids on the World’s Plants”

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Abstract

An annotated list is provided of the most significant errors and omissions from a series of books on aphids on the world’s plants. Some of the problems of ensuring the provision of accurate scientific information, both as hard copy and on-line, are discussed.

Key words: aphids, nomenclature, synonyms, host-associations

Introduction

Any author will know that the satisfaction gained from seeing the results of one’s labours in print is always tempered by the mistakes one immediately starts to find; the glaring errors that had somehow remained hidden from view in hours of manuscript checking but that now leap from the page, and the more subtle ones that gradually come to light over a period of years but have no less potential to misinform or mislead, and may even be quoted by other authors, thus perpetuating them for generations to come.

The series of books that we have published on aphids on the world’s plants (Blackman & Eastop 1984, 1994, 2000, 2006) are no less error-prone, and over the years since publication we have accumulated notes on many errors and omissions. In this paper we list the most serious and significant of these. It may seem rather late to be offering corrections to works published up to 25 years ago, but we believe that these books are still being used by entomologists throughout the world, who might wish to spend a short time making marginal annotations to their copies.

This cannot of course be a complete up-date; the addition of new aphid species and new host records and the changes to the keys that would be required to accommodate these would necessitate a much larger publication. We do however take the opportunity to draw attention to some key works that have been published subsequently, such as revisions of aphid genera, regional faunas, and relevant papers in the rapidly expanding work on aphid molecular systematics.

Aphids on the World’s Crops (Blackman & Eastop 1984), reprinted with some corrections 1985, and Second Edition, 2000)

The preparation of the second edition of this work gave us the opportunity to correct the errors in the first, although some still remained uncorrected. For example “*Macrosiphum Oestlund*” in both editions (p. 294 in the first and p. 289 in the second) should be corrected to *Macrosiphum Passerini*. We omitted Africa from the distribution of *Nasonovia ribisnigri* (Mosley), although this species has been in South Africa since at least 1969, and has also been reported from Burundi and Rwanda (Remaudière & Autrique 1985). We also reported in both editions (p. 236 in the first and p. 241 in the second) that *Aplooneura lentisci* (Passerini) had not yet been found in North America, overlooking the fact that one of its synonyms is *Rhizobius poae* Thomas, described from Illinois in 1879 (see Footit *et al.* 2006).

Inevitably new nomenclatural errors crept into the second edition:

- The name *Astegopteryx styracophila* Karsch replaced *A. muiri* (van der Goot) in the text of the second edition (p. 243) following the elucidation of the life cycle of this aphid by Kurosu *et al.* (1998), but the name remained unchanged in the list and key to aphids likely to be found on ginger (p. 101).
- The author of the name *Diuraphis noxia* was established as Kurdjumov by Kovalev *et al.* (1991), whose important review of the Russian language literature on this important pest aphid was overlooked by us. The correct name for the Russian wheat aphid (p. 263) is *Diuraphis noxia* (Kurdjumov), not *D. noxia* (Mordvilko).
- *Lipaphis pseudobrassicae* replaced *L. erysimi* as the correct name for the turnip or mustard aphid (p. 286), but it should be *L. pseudobrassicae* (Davis), not “*L. pseudobassicae* (Kaltenbach)”.
- The correct name for the rice root aphid (p. 334) is *Rhopalosiphum rufiabdominale* (Sasaki), not *rufiabdominalis*, because the gender of *Rhopalosiphum* is neuter.

Numerous papers are of course published each year on economically-important aphids and we cannot review all the work since 2000, so we will just select those developments that might make entries in our book misleading. For a more recent review of research on 14 of the most economically-important aphid pest species and its taxonomic implications see Blackman and Eastop (2007).

- *Aphis oenotherae* Oestlund colonises gooseberries (*Grossularia*) and currant bushes (*Ribes*) in North America, migrating for the summer to Onagraceae (p. 235). Morphologically indistinguishable aphids found on *Oenothera* in Europe were thought previously to be an introduced anholocyclic population of the North American species, but have now been shown to have a holocycle on *Oenothera* in northern Europe (Rakauskas 2007), and thus to differ biologically from North American *A. oenotherae*. They have been described as a new species, *Aphis holoenotherae* Rakauskas. *Oenothera* is a New World genus, so this must be a form as yet unrecognised in its country of origin.
- *Brachycaudus prunicola* (Kaltenbach), forming spring colonies on *Prunus* spp. (usually *spinosa* but sometimes *domestica* or *insititia*) and with at least a partial migration to *Tragopogon*, is not confined to Europe as stated on p. 249, but is also recorded from west Siberia (Stekolshchikov *et al.* 2008), Kazakhstan (Kadyrbekov 2005) and Pakistan (Baluchistan; Naumann-Etienne & Remaudière 1995). In Britain and northern France populations living all-year-round on *P. spinosa* were formerly regarded as *B. prunicola* but have been distinguished as a separate species, *B. prunifex* (Theobald) (Blackman 2010).
- *Cerataphis brasiliensis* (Hempel) is stated (p. 255) to be common on coconut and oil palm throughout the tropics. In fact there are relatively few records of this aphid from oil palm (*Elaeis*), compared with those from coconut, *Areca catechu* and various cultivated ornamental fern palms.
- *Greenidea fericola* Takahashi (p. 277) has spread with remarkable rapidity around the world since 2000 (Bella *et al.* 2009), and is now in southern Europe, southern USA, Mexico (Peña-Martínez *et al.* 2003), Brazil (Sousa-Silva *et al.* 2005) and Peru (Rubín de Celis *et al.* 2006). The fig tree (*Ficus*) species attacked are mainly ornamental. Another species of *Greenidea*, that feeds on Myrtaceae including *Psidium guajava*, is discussed in both editions under the name *G. formosana*, with a distribution restricted to Asia (p. 277). Halbert (2004) established that the correct name for this species is *G. psidii* van der Goot, and cited records of its presence in Hawaii in 1993 and in California in 1998, as well having a specimen that is apparently this species from Brisbane, Australia. *G. psidii* has also now been recorded from Mexico (Peña-Martínez *et al.* 2003) and Costa Rica (Pérez Hidalgo *et al.* 2009), and a record of *G. fericola* in Colombia by David Giraldo *et al.* (2009) could possibly be this species.
- The account on p. 297 under the name *Melanaphis formosana* (Takahashi) needs to be revised following the work of Halbert & Remaudière (2000). This name is now synonymised with *M. sacchari* (Zehntner). The species introduced into the USA to which our account should be applied feeds principally on *Miscanthus*, and is now named *M. sorini* Halbert & Remaudière; Sorin (1970) gave an account of this aphid (as *Longiunguis formosanus*) in Japan, where it has a holocycle with alate males. This species seems closely related to and morphologically almost indistinguishable from the Indian aphid *M. indosacchari* (David) mentioned on p. 298, but the form introduced into Florida would not colonise *Saccharum* in laboratory tests.

Aphids on the World's Trees (Blackman & Eastop, 1994)

We recently placed a fully revised and updated version of this book on-line at <http://www.aphidsonworld-plants.info>. This incorporates all the important advances in knowledge of tree-dwelling aphids since 1994, including more than 300 new species. Especially notable publications since 1994 are the catalogue of the world's aphids by Remaudière & Remaudière (1997), the host plant catalogue of palaearctic aphids by Holman (2009), and the comprehensive review of the drepanosiphine aphids of the world by Quednau (1999, 2003 and 2010). Also, significant advances have been made in the taxonomy of Hormaphidinae at the generic level arising from studies of their DNA, symbionts and life cycles, for example by Fukatsu *et al.* (1994) and Stern *et al.* (1997).

Clearly there is too much new information to attempt even a summary here. Nevertheless it may still be useful to include here some of the more significant errors in our 1994 book, in the hope that copies will be marginally annotated to avoid any further misguidance.

- The antennae depicted in Fig. 81 are referred to in the legend (p. 331) as being those of spring migrant alatae, whereas the alatae of *Pistacia*-feeding Fordini emerge from the galls and migrate to secondary hosts in the autumn (see for example Fig. 2 on p. 8).
- In couplet 5 of Key F to aphids on *Quercus* (pp. 430–431), the two halves of the couplet are reversed; the first part should lead to *Thelaxes californica* and the second part to *T. suberi*. Fortunately this mistake does not seem to have led anyone to record the finding of the North American species in Europe.
- Despite the introductory statement that precedes the host list and key to aphids on *Rhus* (p. 441), several species of *Toxicodendron* (*succedanea*, *trichocarpa*, *verniciflua*) are trees, and are included in this host list. (*Toxicodendron* is now regarded as a separate genus by many authors.) Also, in the key to *Rhus*-feeding aphids (p. 443), the first part of couplet 7 should lead to *Carolinaia rhois* (the current name for *Glabromyzus rhois*), and the second part of couplet 10 should lead not to *Carolinaia rhois* but to *C. japonica*.
- On p. 565, we state that the alata of *Aphis schinifoliae* is undescribed and the life cycle is unknown, overlooking the fact that the redescription of this species by Remaudière *et al.* (1992), in their paper on the aphids of Bolivia, included both the alate vivipara and the ovipara, together with information about the life cycle.
- *Brachycaudus cerasicola* Mordvilko in Nevytsky, a Central Asian species distorting the leaves of *Prunus* spp. in spring and probably migrating for the summer to Labiatae (Shaposhnikov 1964, as *B. phlomicola* Nevytsky) was erroneously treated (pp. 584–585) as a synonym of another Central Asian *Prunus*-feeding species, *B. pilosus* Mordvilko in Nevytsky. The latter aphid is in fact a quite different species characterised by a pair of pleural tubercles on the pronotum, for which Shaposhnikov (1950) erected the subgenus *Mordvilkomemor*, and its males are apterous indicating that there is no host alternation. *B. cerasicola* has only been recorded from countries of Central Asia, whereas the range of *B. pilosus* extends into mountainous regions of Pakistan (Naumann-Etienne & Remaudière 1995) and northern India.
- The authors of the species *Drepanaphis granovskyi* (p. 661) were not Smith and Dillary but Smith and Knowlton.
- On p. 663, we wrote that the life cycle and sexuales of *Drepanosiphoniella aceris aceris* Davatchi, Hille Ris Lambers & Remaudière were unknown. In fact, Remaudière & Leclant (1972) included information on the life cycle of this subspecies, and provided a table comparing data for apterae, alatae, oviparae and males of both subspecies, the nominotypical one and *D. aceris fugans* Remaudière & Leclant.
- Evidence that the name *Hormaphis hamamelidis* (Fitch) was being applied to two species with different biologies on witch-hazel (*Hamamelis virginiana*) in eastern North America was discussed in our 1994 book (pp. 721–722). Populations with host alternation to *Betula* had in fact been distinguished and described as *H. cornu* (Shimer) by von Dohlen and Stoetzel (1991), the Fitch name being ascribed to the species occurring at higher altitudes and latitudes that has an abbreviated life cycle and no host alternation.
- A similar case is that of *Hyalopterus amygdali* (Blanchard), which in 1994 (p. 723) was the name being applied to populations on both peach (*Prunus persica*) and almond (*P. amygdalus*), although enzyme studies (Spampinato *et al.* 1988) had indicated that there might be two sibling species with different host associations. Subsequent morphological and molecular studies (Mosco *et al.* 1997, Poulios *et al.* 2007, Lozier *et al.* 2008) have all confirmed this, and the peach-feeding taxon has been described as *H. persikonis*

Miller, Lozier & Foottit (Lozier *et al.* 2008), although it is possible that an earlier European name, for example *Aphis amygdali persicae* Mosley 1841 or *Aphis persicariae* Hartig 1841, is applicable to this species.

- The author of the generic name *Kaburagia* (p. 727) is Takagi, not Takahashi.
- An account of the genus *Lachnochaitophorus* should have appeared on p. 731. This North American genus includes two oak-feeding species, *L. obscurus* (Tissot) and *L. querceus* Granovsky. Quednau (1999) reviewed and illustrated both species. [Couplet 19 of Key F to aphids on *Quercus* (p. 433) separates *Patchia winforii* from the two species of *Lachnochaitophorus*. *P. winforii* Miller is now considered to be a synonym of *L. querceus* Granovsky, so this couplet should be ignored, going directly to couplet 20, and the account of *P. winforii* on p. 800 applied to *L. querceus*.]
- On p. 739, *M. pseudocoryli* Patch occurs in north-eastern, not north-western USA, and the same error was made in the introduction to the genus *Pseudopterocomma* on p. 851, where “northwest” should be “north-east”.
- *Megalophyllaphis obscura* M.R. Ghosh, A.K. Ghosh and Raychaudhuri, referred to on p. 741, is in fact the same species as *Yamatocallis obscura* (M.R. Ghosh, A.K. Ghosh and Raychaudhuri), treated on p. 924. *Megalophyllaphis* was synonymised with *Yamatocallis* by Chakrabarti & Raychaudhuri (1978).
- We were in error in stating on p. 749 that *Mindarus obliquus* (Cholodkovsky) has been introduced from Europe to Canada and Alaska. Its hosts are *Picea* species native to North America, and clearly the introduction must have been the other way, from America to Europe.
- The distribution of *Myzus padellus* Hille Ris Lambers and Rogerson is not restricted to Europe as stated on p. 769, but extends across Russia to east Siberia (Pashchenko 1988). It was recently recorded from Georgia (Barjadze 2008).
- The record of *Neochromaphis coryli* (Takahashi) from *Carpinus laxiflora* in Japan (p. 774) should be referred to *N. carpinicola* Takahashi.
- The statement that *Neopterocomma asiphum* Hille Ris Lambers is only recorded from Germany (p. 778) is erroneous; this species is actually distributed widely in central and eastern Europe, with records from Germany, Hungary, Poland, Slovakia, Moldova, Bulgaria and Romania.
- The account of *Pemphigus junctisensorius* Maxson on p. 805 overlooked the fact that Smith (1985) had synonymised this species with *P. tartareus* Hottes and Frison, after making successful transfers from *Populus* to *Bidens* (from which *P. tartareus* was described), and to *Dichondra repens* (Convolvulaceae).
- *Schizaphis mali* Shaposhnikov was omitted from p. 871, from the list of aphids recorded from *Malus baccata* (p. 236), and from the key. This aphid, described from Russia (Shaposhnikov 1979), rolls the leaves of *M. baccata* into pod-shaped pseudogalls before migrating to *Carex* spp. It is included in the key to aphids on *Malus* at <http://www.aphidsonworldsplants.info>.
- The account of *Schizaphis punjabipyri* (Das) on p. 871 failed to mention the synonymy with *S. rotundiventris* (Signoret) proposed by Shaposhnikov (1979). Anholocyclic populations of *S. rotundiventris* on *Cyperus* spp. and other monocots have spread throughout the warmer regions of the world, and it is likely, but still unproven by experimental transfers, that *S. punjabipyri* on *Pyrus* in northern India and Pakistan is the primary host form of this aphid.
- In the account of *Stegophylla* on pp. 886–7, the species names *querci* and *quercicola* are wrongly applied, and the information given under these names should be disregarded, as also should couplets 37–40 of KEY F to aphids on *Quercus* (pp. 435–436). *S. quercina* Quednau is not a synonym of *S. quercicola* (Monell), and the name *querci* Fitch is no longer applicable as Fitch’s species seems to be an *Anoecia* (Remaudière & Remaudière 1997). Quednau (2010) has now provided a full account of this genus and the on-line version of *Aphids on the World’s Trees* has been revised following his work.

Aphids on the World’s Herbaceous Plants and Shrubs (Blackman & Eastop, 2006)

Here we obviously cannot up-date all the information in our 2006 two-volume work on aphids of herbaceous plants and shrubs. Researchers on palaearctic aphids can now consult the host plant catalogue of Holman (2009), which

provides more up-to-date host-plant lists including many more records, with all sources fully referenced. Below we list some of the more significant errors and omissions that have come to light since publication, particularly those with the potential to mislead.

- One would think it difficult when proof-reading to overlook an extraneous question mark in bold 36-pt font, but this happened in the title to Volume 1 (p. 1). There was no rhetorical intent, the question mark merely reflecting some initial uncertainty over what to call this volume, and failure to use an eraser after the decision was made.
- On p. 96, *Metopolophium fasciatum* Stroyan was omitted from the list of aphids feeding on the grass *Arrhenatherum elatius*, despite being a favoured host of this aphid.
- On p. 194, under *Caltha palustris*, “*Rhopalosiphum*” should be inserted before “*nymphaeae*”.
- On p. 207, under *Carduus nutans*, “ssp. *acanthoidis*” should be deleted.
- On p. 325, the species listed and keyed as “*Blanchardaphis* sp.” under *Cuphea* has been described as *Impatientinum paranaense* de Carvalho, Cardoso & Lazzari, 2004. This aphid lives on *Cuphea calophylla* in the Brazilian state of Parana (de Carvalho *et al.* 2004).
- On p. 528, under *Holcus lanatus*, “*graminum* ssp.” should be deleted from between *Schizaphis* and *holci*.
- On p. 584, *Latania* is missing. Although fan palms could be considered to be trees, its associated aphid *Cerataphis lataniae* has a paragraph on p. 1125 (Volume 2).
- On p. 606, *Cymbalaria muralis* has been included under *Linaria vulgaris*. Although the two genera are sometimes treated as synonymous, these two plants are very different species, and have different aphids specifically associated with them. *Dysaphis gallica* feeds on *Cymbalaria muralis*, not on *Linaria vulgaris* as stated on p. 1147 in volume 2, and *Brachycaudus linariae* and *B. rinariatus* feed on *Linaria*.
- The *Aulacophoroides* sp. on *Millettia* in Hong Kong (p. 658) has been described as *Aulacophoroides millettiae* Qiao, Jiang and Martin, 2006, and is included in the key to aphids on *Millettia* at <http://www.aphidsonworldsplants.info>.
- *Minuartia peploides* is included on p. 659, but it is a synonym of *Honkenya peploides* already listed on p. 530, so the aphids listed under that name should include *Myzus persicae*.
- Most of the records of *Aphis oenotherae* on *Oenothera* spp. in Europe (p. 681) should be referred to *Aphis holoenootherae* Rakauskas (2007; see above), which will key out to *Aphis oenotherae* on p. 682.
- A notable omission from the list of aphids under *Photinia* (= *Heteromeles*) *arbutifolia* on p. 729 is the aphid known as *Prociphilus caryae arbutifoliae*, which forms spring colonies on this commonly cultivated shrub in western USA. This aphid is included in the key to aphids on *Photinia* at <http://www.aphidsonworldsplants.info>, which includes *Photinia* species of both shrub and tree habit.
- On p. 730 in the list of aphids under the plant name *Phragmites australis*, *Hyadaphis* should read *Hyalopterus*.
- On p. 809, the second half of the couplet under *Rhodomyrtus* should lead to *Greenidea psidii*.
- On p. 1026 (Volume 2), several works on regional aphid faunas were omitted from the list that clearly deserved mention. In the western palaearctic, Lampel & Meier (2003, completed with a second volume in 2007) provided keys to and accounts of the aphids of Switzerland, García Prieto *et al.* (2004) published an updated checklist of the Iberian-Balearic Aphidini, and Toros *et al.* (2002) reviewed aphids of the eastern Mediterranean region. In the Nearctic, the annotated list of aphids of the Yukon by Foottit & Maw (1997) should have been mentioned, and works on neotropical aphids should have included the annotated list of Argentinian aphids by Ortego *et al.* (2004; with additions by Ortego *et al.* 2006), and the account of aphids of Guadeloupe and the Greater and Lesser Antilles by Etienne (2005).
- On p. 1036, in the introduction to the genus *Aleurodaphis*, host alternation from *Styrax* is suggested for one species, *takenouchii* Takahashi, but this overlooked the fact that this species is now placed in *Tuberaphis* (Stern *et al.* 1997).
- In the introduction to the genus *Aphis* (pp. 1047–1048), we neglected to mention the two important papers by Pashchenko (1997a, b) that provided keys to all the species of this genus known from east Siberia.
- On p. 1070 (and also on pp. 477–478), we used the name *Aphis kaltenbachi* Hille Ris Lambers, but as García Prieto *et al.* (2004) have pointed out, Hille Ris Lambers (1956) had no valid reason to erect a new name for *Aphis ononidis* (Schouteden), which is thus the inappropriate but nevertheless correct name for

this *Genista*-feeding species. We also neglected to follow García Prieto *et al.* (2004) in correcting four other *Aphis* names that had been wrongly used as replacements; *A. balloticola* Szelegiewicz (pp. 155 and 1052) should be *A. ballotae* Passerini, *A. davletshinae* (pp. 39, 47, 300, 636–637 and 1069) should be *A. althaeae* (Nevsky), *A. longirostrata* Hille Ris Lambers (pp. 741–742 and 1072) should be *A. longirostris* Börner, and *A. stroyani* Szelegiewicz (pp. 733–734 and 1090) should be *A. picridis* (Börner). They also point out that *A. ruborum* (Börner in Börner & Schilder 1931) has priority over *A. ruborum* (Börner 1932) (p. 1085).

- On p. 1082 we should have cited the redescription of *Aphis popovi* (Mordvilko) by Rakauskas (1996), and his morphometric comparison of this species with other palaearctic *Ribes*-feeding *Aphis*.
- On p. 1090 we wrote that sexual morphs of *Aphis stachydis* Mordvilko did not appear to have been described, whereas García Prieto *et al.* (2004) have provided descriptions of oviparae and apterous males, collected in Spain and France in October.
- On p. 1091, *Aphis taraxacicola* (Börner) was described as “mottled dark green”, as this is the typical colour of this aphid in Europe, but the species described from central Asia by Nevsky (1951) as *Cerosiphia taraxacicola*, and synonymised by Remaudière & Remaudière (1997) with the Börner species, is pale yellow, and the aphid described as *A. taraxacicola* by Lee *et al.* (2002) in Korea is also pale yellow. It seems probable that these are two different species.
- On p. 1093, the record of *Aphis torquens* Holman from east Siberia should be referred to *A. fukii* Shinji (Pashchenko 1997a).
- On p. 1098 we failed to mention the synonymy by Eastop & Blackman (2005) of *Polygonaphis avicularisucta* Zhang, Chen, Zhong & Li, in G.-x. Zhang 1999 with *Aspidaphis adjuvans* (Walker), despite the entry under that name in the index (p. 1417).
- On p. 1104 we should have mentioned that *Aulacorthum speyeri* Börner has been found in Argentina (Ortego 1998). On the same page we omitted to include an entry for *Aulacorthum syringae* (Matsumura), despite including this species in the list and key to aphids on *Syringa* (p. 940–941). For a brief account of this aphid see Blackman & Eastop (1994) or <http://www.aphidsonworldsplants.info>, where we have included *Syringa* species of both shrub and tree habit.
- On pp. 1106–1110, we followed the subgeneric classification of *Brachycaudus* by Andreev (2004), placing a number of species (*acaudata*, *amygdalinus*, *brevirostratus*, *rumexicolens*, *sedi*) in subgenus *Mordvilkomemor*. Shaposhnikov (1950) erected this subgenus for *B. pilosus* (Mordvilko ex Nevsky) a small *Prunus*-feeding species in mountainous regions of Central Asia, northern India and Pakistan, which has the unique feature of a pair of pleural tubercles on the pronotum. None of the above species have this feature, and we suggest that the subgeneric name *Thuleaphis* Hille Ris Lambers should be retained for this group of species with a broadly rounded cauda and well-developed marginal tubercles, as in Remaudière & Remaudière (1997).
- *Brachyunguis calligoni* (Nevsky) (p. 1112) was synonymised with *B. harmalae* Das by Kadyrbekov (1999).
- On p. 1113, the plant from which *Brachunguis kaussarri* Remaudière & Davatchi was described has been confirmed as *Stocksia brahuica* by G. Remaudière (pers. comm., 2010).
- The record of *Brachyunguis zygophylli* (Nevsky) from Spain on p. 1114 should be referred to *B. harmalae*, García Prieto *et al.* (2004) having synonymised *B. zygophylli* Gomez-Menor *non* Nevsky with that species.
- On p. 1117, we omitted to mention that Tao (1999) has recorded *Capitophorus formosartemisiae* (Takahashi) from a primary host, *Elaeagnus angustifolia*, in Taiwan.
- Similarly, on p. 1121 we neglected to note that *Cavariella angelicae* (Matsumura) has been recorded from a primary host, *Salix babylonica* in Korea (Lee *et al.* 2002).
- In the introduction to *Cryptosiphum* on p. 1139, the key couplet in Key A to aphids on *Artemisia* referred to should be 49, not 47.
- The world revision, keys to species and illustrations of *Ctenocallis* by Quednau (2003) should have been mentioned in the introduction to this genus on p. 1140.
- The list of regional accounts of *Dysaphis* (p. 1143) should have included that for Japan by Sugimoto (2003).
- On pp. 1144 and 1150, we described the colonies of *Dysaphis (Pomaphis) aucupariae* (Buckton) and *D.*

(*P.*) *plantaginea* (Passerini) on their secondary host plants as ant-attended. On the contrary, aphids of subgenus *Pomaphis* are not usually attended by ants on their secondary hosts.

- The account on p. 1147 of *Dysaphis (Pomaphis) gallica* (Hille Ris Lambers) failed to mention populations forming leaf pseudogalls on *Malus* in Pakistan, which Naumann-Etienne & Remaudière (1995) suggest may be the primary host form of this species.
- The account of *Dysaphis (Pomaphis) plantaginea* (p. 1150) should have included East Africa (Burundi; Remaudière & Autrique 1985) in the distribution of this species.
- In the account of *Dysaphis radicola* (Mordvilko), “mon. hol.” should have been “heter. hol.” (p. 1151).
- *Ericaphis leclanti* Remaudière is missing from p. 1155, and from the host list and key to aphids on *Arctostaphylos* in volume 1 (pp. 89–91). Apteræ of *E. leclanti* are white with body length 1.5–2.2 mm, and occur on young shoots of *Arctostaphylos uva-ursi* in the French Alps (Remaudière 1971). Alate viviparae, apterous males and oviparae are included in the original description, the sexual morphs appearing in early August. In the key to aphids on *Arctostaphylos* in volume 1, *E. leclanti* will go through to *Wahlgreniella nervata*, except for its much less swollen, almost cylindrical siphunculi.
- Also on p. 1155, we neglected to mention the very full, well-illustrated account of *Ericaphis scammelli* (Mason) in Italy by Barbagallo *et al.* (1999).
- On p. 1159 we wrote that sexual morphs of *Eucarazzia elegans* are unknown, yet Naumann-Etienne & Remaudière (1995) have recorded sexuales of this species from *Nepeta* in Iran. G. Remaudière has communicated to us (2010) that these were first collected in November 1955, that males were apterous, and that fundatrices were found on *Nepeta* in April 1963, indicating lack of host alternation. We also failed to mention that *E. elegans* has been introduced to Australia (in about 1994).
- On p. 1168, as is evident from the states listed, *Hyalomyzus collinsoniae* (Pepper), occurs in the eastern, not western, USA.
- We failed to record that *Hyalopteroides humilis* (Walker) (p. 1170) and *Illinoia azaleae* (Mason) (p. 1174) and *Melanaphis donacis* (Passerini) (p. 1222) have now been recorded from South America (Argentina; Ortego *et al.* 2004).
- The authority for *Ipuka dispersa* (p. 1180) is not van Harten & Ilharco; the correct attribution is *I. dispersa* (van der Goot).
- On p. 1191 under *Macchiatiella rhamni* (Boyer de Fonscolombe), the name of the Nevsky subspecies is *M. rhamni tarani*, not *M. rhamni turanica*.
- On p. 1221, we wrote that sexual morphs of *Megourella tribulic* (Walker) have not been recorded. It is true that they have not been described, but Hille Ris Lambers (1949) found them in late September to October in the Netherlands, and they have been obtained in culture in England (BMNH colln, leg. H.L.G. Stroyan). Males are small and apterous.
- The account of *Melanaphis koreana* (Sorin) on p. 1223 neglected the work of Lee & Seo (1992), who gave the colour of apteræ in life as pale yellowish grey, and described the alata.
- On p. 1227, in the account of *Metopolophium festucae* (Theobald), we neglected to report the introduction into Chile of a population identified as the cereal-feeding subspecies of this aphid, *M. festucae cerealium* Stroyan (Remaudière *et al.* 1993).
- On pp. 1229–1231, we failed to include records from Pakistan by Naumann-Etienne & Remaudière (1995) in the distributions of two species, *Micromyzodium filicium* David and *Micromyzus niger* van der Goot.
- On p. 1234, the account of *Muscaphis escherichi* (Börner) is somewhat misleading as it implies that the synonymy with *M. drepanosiphoides* (MacGillivray & Bradley) is fully established, and that populations previously known under that name on *Sorbus* have a much more restricted distribution than those on mosses. In fact spring populations on *Sorbus* occur throughout most of Europe and in North Korea and Canada, yet all attempts at transfer of alatae from *Sorbus* to mosses have failed other than that by Stekolshchikov & Shaposhnikov (1993), who obtained limited success in transfers to *Plagiothecium laetum*, and gynoparae and males have never been collected from mosses. Molecular work is needed to determine whether the anholocyclic moss-feeding populations in Europe are isolated genetically from the *Sorbus*-feeding generations, in which case they should perhaps continue to be regarded as a separate species.
- The distribution of *Myzaphis bucktoni* Jacob failed to include Pakistan, Mexico and Argentina, reported by Naumann-Etienne & Remaudière (1995).

- On p. 1241, we failed to include Africa (Burundi, South Africa) in the recorded distribution of *Myzus lythri* (Schrank), as reported by Remaudière & Autrique (1985).
- On p. 1243, we wrote that North American populations of *Myzus varians* Davidson seem to be anholocyclic on *Clematis*. This is not exactly true as, although this aphid is mainly recorded in USA from *Clematis* (Stoetzel & Miller 1998), spring populations causing leaf roll of peach in California were reported by Essig (1917).
- On p. 1246, we omitted Africa from the distribution of *Nasonovia ribisnigri*. Remaudière & Autrique (1985) pointed out that the aphid collected on *Cichorium intybus* and described and illustrated under the name *Acyrtosiphon primulae* by van Heerden (1969) is an aptera of *N. ribisnigri*, and this species is also known from Burundi and Rwanda.
- The distribution of *Nearctaphis bakeri* (Cowen) in Europe is not just confined to the south as intimated on p. 1248. Alatae have been trapped in England since 1969 (Stroyan 1972). Colonies have subsequently been found on *Trifolium repens* in southern England and Northern Ireland, and it has even been trapped in Scotland (Blackman, 2010).
- On p. 1252, we failed to record the presence of the violet aphid, *Neotoxoptera violae* (Pergande) in Europe; it was recorded first from Spain in 1991 (Meliá 1991), then Italy (Barbagallo & Cocuzza 1998) and most recently it was confirmed to occur in France (Germain & Deogratias 2008).
- *Paczoskia wagneri* (Remaudière & Tuatay) is missing from the systematic treatment of species on p. 1258, although included in the host list and key to aphids on *Echinops* in volume 1. Apterae of *P. wagneri* are shining dark brown to almost black in life, with body length 2.7–3.4 mm. They were described from an unidentified *Echinops* sp. in Turkey (Remaudière & Tuatay 1963, as *Macrosiphoniella* subgenus *Paczoskia*). No other morphs are recorded.
- On p. 1267 we failed to give the distribution of *Pleotrichophorus filaginis* (Schouteden). It is only known from Belgium, Netherlands, France and Germany.
- On p. 1281 we wrote that *Rhopalosiphoninus staphyleae tulipaellus* Theobald is permanently anholocyclic, and that it is one of several “asexual offshoots” of *R. staphyleae*, which has a sexual phase on *Staphylea* in continental Europe. This ignores the fact that Müller (1959) reared apterous males from a sample collected on *Lamium* in northern Germany that he identified as *tulipaellus*, along with oviparae with unthickened hind tibiae that laid infertile eggs. Much smaller oviparae with thickened hind tibiae have also been collected in England and Czech Republic on secondary host plants (Blackman, 2010).
- Also on p. 1281, “oxyacanthae (=oxyacanthae?)” after *Rhopalosiphum insertum* (Walker) is a typographical error, but it reflects our indecision about the correct name for this aphid. The Walker name has been used extensively in the literature of the last 40 years, but following García Prieto *et al.* (2004) this aphid should now be called by its earlier name *R. oxyacanthae* (Schrank).
- On p. 1289, *Schoutedenia* is in the tribe Schoutedenii, not Cervaphidini.
- On p. 1308, the introduction to *Tamalia* should have referred to the significant recent work of Miller & Crespi (2003) on the molecular phylogeny of this genus and the evolution of inquilinism and host relationships.
- In the account of *Theroaphis* (pp. 1312–1314), *Bicaudella* is treated as a subgenus, although we accept the decision by Quednau (2003) to raise this group to the status of a full genus. The references to “Remaudière 1989b” in the account of *Theroaphis* should be replaced by “Remaudière 1989a”.
- On p. 1315, we wrote that an ovipara of *Thripsaphis (Trichocallis) daviaulti* (Quednau) was found in early October, but this seems to be an error. The ovipara of this species is still unknown.
- On p. 1321, the distribution of *Trichosiphonaphis polygoni* (van der Goot) should have included east Africa (Burundi, Kenya; Remaudière *et al.* 1994).
- Also on p. 1321, the numbers of secondary rhinaria given for alatae of *Trichosiphonaphis polygonifoliae* (Shinji) could be misleading, as they apply to spring migrants newly arriving on *Polygonum*. Return migrants (gynoparae) produced on *Polygonum* in autumn for migration back to *Lonicera* have far more secondary rhinaria; 86–100 on antennal segment III, 46–63 on IV and 0–9 on V.
- On p. 1322, under *Tuberaphis takenouchii* (Takahashi), the name that we suggested may be a synonym of this species should have been *T. loranthicola* Ghosh, which is a replacement name given to *Astegopteryx loranthi* Tseng & Tao by A.K. Ghosh (1988).

- The distribution of *Uroleucon jaceicola* (Hille Ris Lambers) is not confined to western Europe as intimated on p. 1334. This species is recorded from many eastern European countries, and also from west Siberia and Tajikistan. The subspecies *pasqualei* described from Italy has also since been recognised from Spain and Czech Republic (Holman 2009).

Conclusion

The long list provided above perhaps demonstrates that some people are particularly error-prone. Nevertheless there must be some degree of fallibility in us all. Anyone who has acquired specialist knowledge of a particular subject will soon find errors or inaccuracies in what others have written, and lose some of their respect for the accuracy of the written word. The problem is that books and journals preserve these errors on library shelves in perpetuity, and any lists of errata published subsequently are liable to be overlooked.

More and more scientific publications are now on-line, and it will surely not be long before the only way to obtain hard copy will be by printing it from a computer. On-line publication has massive benefits with regard to cost, image quality and speed of production. It also has another significant potential advantage, which has not yet been fully realised. It could be made possible for authors to correct their mistakes. Perhaps it will not be long before it is customary for the publishers of on-line journals to provide authors with the facility to correct any significant errors that they subsequently discover, by means of footnotes or addenda to their original publication, and these could be signalled in the original text.

Data bases can also be readily generated and cross-referenced by computer. However, it hardly needs to be said that computer-generated information is also prone to error, and that sometimes such mistakes can have more wide-ranging consequences. A relevant example can be found in the host plant catalogue of Holman (2009), where information on the hosts of *Aulacorthum magnoliae* (Essig & Kuwana), which occurs on plants in more than 20 different families in eastern Asia, has unfortunately been repeated under *Aulacorthum perillae* (Shinji), which feeds only on *Perilla* spp. This has been cross-referenced between the two main sections of the book, so that *A. perillae* is listed under numerous plant names and appears to be a highly polyphagous aphid. Fortunately, Holman's magnificent reference work includes the sources of all the records, so that it is possible to check the accuracy of all the information presented.

Data bases and other sources of information on the web that can be continuously updated and corrected by the authors are clearly the ideal solution to the problem of imparting up-to-date information. However, the problem still remains of ensuring the accuracy of such information, in the absence of any organised system of peer review.

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